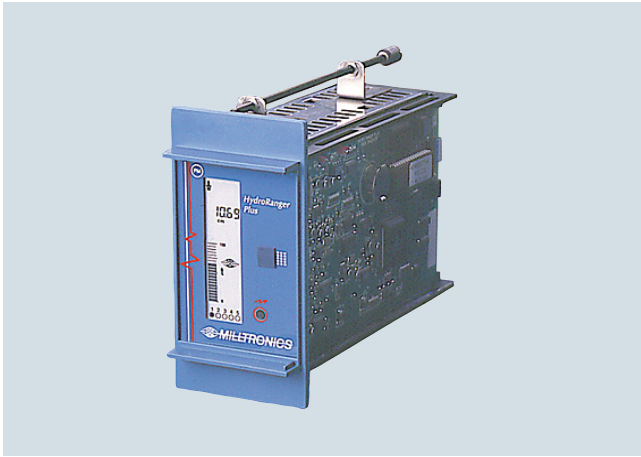


Level Measurement

Continuous level measurement - Ultrasonic controllers

HydroRanger Plus

Overview



HydroRanger Plus is an ultrasonic level controller for control of wet wells and reservoir pump operations, differential control, and open channel flow monitoring, using energy-saving algorithms.

Benefits

- Outputs for alarms, chart recorders, controllers and integration of existing systems
- Monitors wet wells, weirs and flumes
- Energy-saving function with built-in real-time clock
- Special control mode to reduce grease rings and other deposits
- Integral temperature compensation
- Pump performance monitoring
- System monitoring and network analysis

Application

The system is effective in wet wells, weirs, and flumes where foam and turbulence are typical operating conditions. It can be customized to meet your specific application needs – from measuring flow rate in a narrow flume to volume in a ferric chloride storage bank.

The system consists of the electronics housed in a wall-mounted enclosure and a hermetically sealed, corrosion-resistant EchoMax transducer. These components can be separated by up to 365 m (1 200 ft).

Optional submergence shields ensure consistent operation in wet wells where the transducer may be submerged during flooding from rainfall or a power outage. Siemens patented detection software can differentiate between a submerged condition and a high level.

- Key Applications: wet wells, weirs, flumes

Technical specifications

Mode of Operation	
Measuring principle	Ultrasonic level measurement
Measuring range	0.3 ... 15 m (1 ... 50 ft)
Measuring points	1 or 2
Output	
Ultrasonic transducer	44 kHz
Relays	5 alarm/control relays, 1 SPDT Form C per relay, rated 5 A at 250 V AC, resistive load
mA output	0/4 ... 20 mA, optically isolated
• Max. load	1 k Ω
• Resolution	0.1 % of 20 mA
Accuracy	
Error in measurement	0.25 % of range or 6 mm (0.24 inch), whichever is greater
Resolution	0.1 % of measuring range or 2 mm (0.08 inch), whichever is greater ¹⁾
Temperature compensation	-50 ... +150 °C (-58 ... +302 °F) <ul style="list-style-type: none"> • Integral temperature sensor • External TS-3 temperature sensor (optional) • Programmable fixed temperature
Rated operating conditions	
Ambient conditions	
• Ambient temperature for enclosure	-20 ... +50 °C (-4 ... +122 °F)
Design	
Rack mount	DIN 3 HU/14 pitch, 4 rail plug-in unit suitable for standard 84 pitch (19 inch) rack
Panel mount	Suitable for standard panel cutout DIN 43 700, 72 x 144 mm, 100 mm center height
Weight (rack and panel mount)	0.87 kg (1.9 lb)
Material (enclosure)	Polyester/polycarbonate alloy
Electrical connection	
Ultrasonic transducer cable extension	Commercially available copper conductor according to local requirements, rated 250 V/5 A
mA output signal	RG 62-A/U coaxial cable with low capacitance 2-core copper conductor, twisted, shielded, 0.5 ... 0.75 mm ² (22 ... 18 AWG), Belden 8760 or equivalent is acceptable

Power supply	100/115/200/230 V AC, \pm 15 %, 50/60 Hz, 15 VA and/or 9 ... 30 V DC, 8 W
Ultrasonic transducer	Compatible transducers: ST-H and EchoMax series XPS-10/10F, XPS 15/15F, and XRS-5
Displays and controls	
Rack and panel mount	75 x 20 mm (3 x 0.8 inch) LCD (selectable backlighting)
Programming	
	Removable programmer or optional Dolphin Plus
Memory	
	EEPROM (non-volatile), no backup battery required
Certificates and approvals	
	CE ²⁾ , FM, CSA _{US/C} , RCM

- 1) The measuring range corresponds to the distance from the zero point to the sensor face, plus any range extension.
- 2) EMC certificate available on request.

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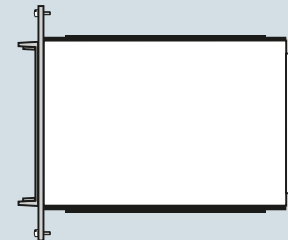
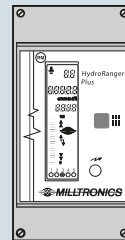
HydroRanger Plus

Selection and Ordering data	Article No.
HydroRanger Plus, rack and panel mount Non-contacting ultrasonic echo ranging technology monitor that comes standard with a backlit display. Measuring range: 0.3 ... 15 m (1 ... 50 ft) Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML1025- 01
Mounting/device version Version for 19 inch rack (requires terminal block; see accessories) Version for panel	1 2
Approvals CE (EN 61326), CSA _{US/C} , FM, RCM	C
Input voltage 100 V AC, 9 ... 30 V DC 115 V AC, 9 ... 30 V DC 200 V AC, 9 ... 30 V DC 230 V AC, 9 ... 30 V DC	A B C D

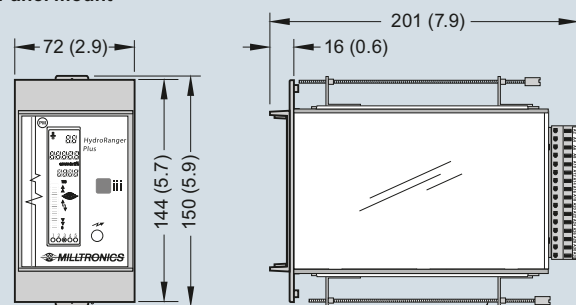
Dimensional drawings

Rack mount

DIN 3U/14HP, 4 rail plug-in unit suitable for standard 84 HP (19 inch) subrack. (Terminal is customer supplied or available as optional accessory.)



Panel mount



Slip on mounting bracket top and bottom screws to be tightened to no more than 5.9 Nm (1 inch/lb) torque.

HydroRanger Plus, dimensions in mm (inch)

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).	
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Operating Instructions English German Note: The Operating Instructions should be ordered as a separate item on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation This device is shipped with the Siemens Level and Weighing manual DVD containing the ATEX Quick Start and Operating Instructions library.	Article No. 7ML1998-1AC02 7ML1998-1AC32
Accessories Handheld programmer Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosure Terminal block for rack mount SITRANS RD100, loop powered display - see Chapter 7 SITRANS RD200, universal input display with Modbus conversion - see Chapter 7 SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7 SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	A5E36563512 7ML1930-1AC 7ML1830-1JL 7ML5741-... 7ML5740-... 7ML5744-... 7ML5750-...
Spare parts Card, Analog HydroRanger Plus Rack/Panel Card, daughter Card, display, backlit	7ML1830-1LR 7ML1830-1LS 7ML1830-1LX